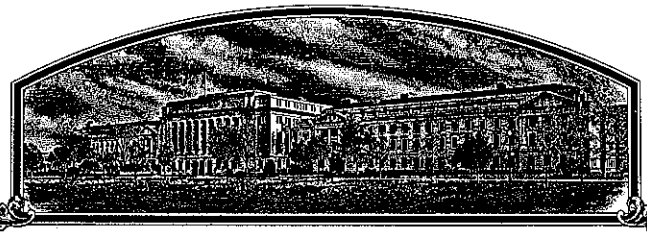

No. 8900036

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

NDSU Research Foundation

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT ETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS Y THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'2371'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 28th *day of* May *in the year of our Lord one thousand nine hundred and* ninety-three.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy
Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S): ~~Pioneer Hi-Bred International, Inc.~~ NDSU RESEARCH FOUNDATION
~~Plant Breeding Division~~
~~Dept. of Cereal Seed Breeding~~

2. TEMPORARY DESIGNATION: XW371

3. VARIETY NAME: 2371

4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code): ~~7301 NW 62nd Ave., PO Box 85~~
~~Johnston, IA 50131-0085~~ P.O. BOX 5014
FARGO, ND 58105

5. PHONE (Include area code): ~~(515)270-3300~~ ~~Ext. 3311~~
(701) 237-7654

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8900036

6. GENUS AND SPECIES NAME: Triticum aestivum L.

7. FAMILY NAME (Botanical): Graminae

FILING
DATE: Dec. 2, 1988
TIME: 1:30 ☐ A.M. ☑ P.M.

8. KIND NAME: Wheat

9. DATE OF DETERMINATION: October 1986

FEES RECEIVED
AMOUNT FOR FILING: $ 180.00
DATE: Dec. 2, 1988
AMOUNT FOR CERTIFICATE: $ 200.00
DATE: ~~April 30, 1993~~

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.): Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION: Iowa

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
~~Dr. Mark Iwig~~ DR. H.R. LUND
~~Pioneer Hi-Bred International, Inc.~~ NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION
~~7301 NW 62nd Ave., PO Box 85~~ P.O. BOX 5435
~~Johnston, IA 50131-0085~~ FARGO, ND 58105
PHONE (Include area code): ~~(515)270-3300 Ext. 3311~~ (701) 237-7654

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
- a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☒ Yes *(If "Yes," answer items 16 and 17 below)* ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? ☒ Foundation ☐ Registered ☒ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? ☐ Yes *(If "Yes," give date)* ☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? ☐ Yes *(If "Yes," give names of countries and dates)* ☒ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT: Mark M. Iwig — DATE: 11/22/88

SIGNATURE OF APPLICANT — DATE

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

EXHIBIT A. ORIGIN AND BREEDING HISTORY OF XW371 HARD RED SPRING WHEAT

XW371 was developed by Pioneer Hi-Bred International, Inc., Plant Breeding Division, Glyndon Cereal Research Station, Route 1 Box 128A, Glyndon, MN 56547. The parentage of XW371 is Era/Azteca 67//Len.

The procedure used to develop XW371 was as follows:

1981 - F1 generation: grown at Glyndon, MN. Assigned the code SBA015.

1981-82 - F2 generation: single heads selected at Yuma, AZ.

1982 - F3 generation: headrows from Yuma single head selections were planted at Glyndon, MN. Single head selections were taken from selected rows.

1982-83 - F4 generation: single head selections from each selected row were grown at Yuma, AZ. Individual rows were selected and cut separately in bulk.

1983 - F5 generation: selected bulk rows from Yuma were grown in a screening yield test at Glyndon. This selection was assigned the code SBA015A. Protein analysis was done at Glyndon.

1984 - F6 generation: SBA015A was grown in a preliminary yield test at Glyndon and three off-station sites. Preliminary quality tests were done at the Pioneer quality lab in Hutchinson, KS. Single heads were picked to begin purification.

1984-85 - F7 generation: single heads were planted as headrows in Yuma. Off-type rows were discarded. The rest were cut as single row bulks.

1985 - F7 generation: SBA015A was grown in an advanced yield test at three locations. Quality testing was conducted at the Pioneer quality lab in Hutchinson, KS.

F8 generation: Purification progeny plots from the Yuma single row bulks were grown at Glyndon. Off-type plots were discarded. Two of the best plots were selected, single heads picked and these plots were bulked individually. These two plots were assigned the experimental codes SBA015A1 and SBA015A2. The remaining plots were bulked together.

1985-86 - F9 generation: headrows from head selections of the two best purification plots at Glyndon were grown at Yuma. Off-type rows were discarded. The remaining rows were cut as individual single row bulks.

1986 - F9 generation: SBA015A was grown in first year elite variety tests at Glyndon and sixteen off-station test sites. Purification seed source was used. Quality evaluations were conducted at the Pioneer quality lab in Hutchinson and at North Dakota State University, Dept. of Cereal Chemistry and Food Technology.

F10 generation: progeny plots from single row bulks of both selections were grown at Glyndon. Off-type plots were discarded and the remaining plots within each selection were bulk harvested.

1987 - F11 generation: SBA015A1 and SBA015A2 were grown in the second year elite variety test at Glyndon and fifteen off-station test sites. Quality evaluations were again conducted at the Pioneer quality lab and at the NDSU quality lab. A .25 acre breeders seed increase of each selection was also grown in isolation. SBA015A1 was selected to be advanced and assigned the experimental code YW371.

1988 - F12 generation: YW371 was grown in the third year elite variety test at Glyndon and nine other sites. Quality evaluations were again conducted at the Pioneer quality lab and the NDSU quality lab. An 8.9 acre parent seed increase was grown near Moorhead, MN. The experimental code XW371 was assigned.

XW371 has shown good uniformity and stability for all traits as described in Exhibit C.

Slightly taller variants have been observed in about a 1 in 20,000 plants frequency. XW371 is moderately insensitive to short photoperiods (Table 4).

Breeders seed is being maintained at the Glyndon Cereal Seed Research Station.

8900036

NDSU

COLLEGE OF AGRICULTURE, CROP AND W SCIENCES DEPARTMENT

North Dakota State University
P.O. Box 5051
University Station
Fargo, North Dakota
58105-5051

Tel. 701.237.7971
Fax 701.237.7973

March 24, 1993

Mr. Alan A. Atchley
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705

SUBJECT: PV Application No. 8900036, WHEAT variety '2371'

Dear Mr. Atchley:

Following is the corrected information that you requested for application materials for 2371:

Exhibit A		-	These traits have been observed for three generations for stability and uniformity.
Exhibit C, Item 5		-	Plant height is 69 cm; 26 cm shorter than (3) Chris.
Exhibit C, Item 6		-	Hairiness of last internode of rachis: present.
Exhibit C, Item 9		-	Auricles, hairiness is absent.
Exhibit D,	(a)	-	...average height of 69 cm, ... (data from Table 1, agronomic comparisons 68.8 cm rounded to 69 cm).
	(b)	-	...hollow, and pubescence is present on the last internode of the rachis.
	(c)	-	Auricles are glabrous, hairiness is absent, and no ...

This is the information requested in a letter (October 14, 1992) to H. R. Lund.

Sincerely,

Richard C Frohberg

Richard C. Frohberg
Professor

cc: Dr. Foster

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EXHIBIT B. NOVELTY STATEMENT

8900036

RAA 1 Apr 1993

Exhibits C and D provide information that should aid in identifying ~~XW371~~ XW371. In exhibit C, item 20, Len is cited as the variety that most closely resembles XW371. The following characteristics would clearly differentiate XW371 from Len:

1. XW371 is 8 cm shorter than Len, on the average.

2. XW371 is 2.6 days earlier heading than Len, on the average.

3. XW371 has a moderately insensitive response to short photoperiods while Len has a sensitive response to short photoperiods.

4. XW371 has shorter and weaker dough mixing characters than Len. XW371 has a mix time of 3.7 minutes vs 4.3 minutes for Len and a mixing tolerance of 4.9 vs 6.5 for Len.

XW371 has shown uniformity and stability for all traits as described in Exhibit C (Form GR470-6), "Objective Description of Variety". Slightly taller variants may be observed at a frequency of about 1 in 15,000 plants.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT *(TRITICUM SPP.)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Pioneer Hi-Bred International, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Plant Breeding Division
7301 N.W. 62nd Ave., P.O. Box 85
Johnston, IA 50131

FOR OFFICIAL USE ONLY
PVPO NUMBER 8900036
VARIETY NAME OR TEMPORARY DESIGNATION
XW371

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[1] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[0][5][7] FIRST FLOWERING [0][6][0] LAST FLOWERING

4. MATURITY *(50% Flowering)*:
[0][4] NO. OF DAYS *EARLIER* THAN ..... [3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[ ][ ] NO. OF DAYS *LATER* THAN ..... [ ] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:
[0][8][2] CM. HIGH
[ ][ ] CM. TALLER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[1][7] CM. SHORTER THAN ..... [3] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][3] NO. OF NODES *(Originating from node above ground)*
[1][5] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][2] MM. LEAF WIDTH *(First leaf below flag leaf)*
[2][3] CM. LEAF LENGTH *(First leaf below flag leaf)*:

8900036

FORM C-41-5 (REVERSE)

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) Oblong

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0 9] CM. LENGTH [1 4] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[3] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0 7] MM. LENGTH [0 4] MM. WIDTH [3 6] GM. PER 1000 SEEDS

17. SEED CREASE:

[2] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) Local

[2] LEAF RUST (Races) Local

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Tanspot - MR-MS

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [1] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	2385	Seed size	2375
Leaf size	2369	Seed shape	Len
Leaf color	Len	Coleoptile elongation	Len
Leaf carriage	Len	Seedling pigmentation	Len

RECEIVED USDA AMS DEC 1 - 1988 Plant Variety Protection Office

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form.

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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EXHIBIT D. ADDITIONAL DESCRIPTION OF XW371 8900036

XW371 is a common Hard Red Spring Wheat, Triticum aestivum L.

Over the two year period 1987-88 at Glyndon, MN and off-station sites XW371 averaged .6 day earlier in heading and 1 day later in physiologic maturity than 2369, 3.3 days earlier in heading and 2 days earlier in physiologic maturity than Marshall, 2.6 days earlier heading and .5 day earlier in physiologic maturity than Len, and 1.1 days earlier heading and 3.5 days later in physiologic maturity than Stoa.

XW371 is a semi-dwarf variety with an average height of 68.8 cm, about .8 cm taller than 2369, 1.3 cm taller than Marshall, 8.0 cm shorter than Len and 22.2 cm shorter than Stoa.

At boot stage the plant color of XW371 is green. Anther color is yellow. A waxy bloom is present on the stem at boot stage, no anthocyanin is present in the stems, stem internodes are hollow, and ~~no~~ pubescence is present on the last internode of the rachis. Three nodes are usually present above ground. Internode length between the flag leaf and the leaf below averages 15 cm. Auricles are glabrous and no anthocyanin is present.

δ AAA 29 Mar 1993 per letter

↓ hairiness is absent;

The flag leaf at boot stage is recurved and twisted. A waxy bloom on the flag leaf sheath is present and pubescence is absent. The first leaf below the flag leaf averages 12 mm wide and 23 cm long.

Heads are dense, oblong, awned, yellow at maturity and average 9 cm long and 14 mm wide.

Glumes at maturity are long and wide with oblique shoulders and acuminate beaks.

Coleoptile color is white, no seedling anthocyanin is present and seedling growth habit is erect.

Seed shape is ovate with rounded cheeks and a medium brush not collared. Seed color is red. Seed size averages 7 mm in length, 4 mm wide and weighs about 36 grams per 1000 kernels.

XW371 is resistant to the major stem rust races and the local leaf rust races. It is moderately resistant to moderately susceptible to the leaf blight complex diseases. It has not been tested for stripe rust, loose smut, powdery mildew or bunt.

XW371 is susceptible to the Great Plains race of Hessian fly and has not been tested for resistance to sawfly, aphids, greenbugs or cereal leaf beetle, although it is believed to be susceptible to these.

Over the two years 1987 and 1988, XW371 has had a good yield record, similar to 2369 and higher than Len. It is well adapted to a wide range of environments and offers the advantages of early heading and maturity, good leaf and stem rust resistance, short strong straw, high yield potential and high grain protein content.

XW371 has good milling and baking characteristics. Grain protein is higher than 2369 and Marshall and equal to Len. Flour yield is higher than 2369 and Len and similar to Marshall. Mix time is shorter than 2369, Len and Stoa but longer than Marshall. Mix tolerance is weaker than 2369 and Len but stronger than Marshall and similar to Stoa. Water absorption is similar to Len and Stoa and higher than 2369 and Marshall. Loaf volume is higher than 2369, Marshall, Len or Stoa.

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Table 1. Agronomic performance of XW371 and standard varieties in elite yield tests for 25 location years during the period 1987-1988.

Variety	Days To 50% Head*	Days To Maturity*	Height (cm)	Lodging Score +	Yield (bu/ac)	Test Wt. (lbs/bu)	Harvest Moist.(%)
XW371	57.9	93.5	68.8	7.9	49.6	57.7	13.3
2369	58.5	92.5	68.0	7.1	49.7	58.6	13.4
Marshall	61.2	95.5	67.5	7.9	52.4	56.7	14.8
Len	60.5	94.0	76.8	8.1	46.8	57.2	15.0
Stoa	59.0	90.0	91.0	7.0	53.8	57.4	14.2

* Number of days from planting to 50% heading and physiologic maturity.

+ Scale of 1-9; 1 = poor, 9 = excellent.

Table 2. Disease response of XW371 and standard varieties in elite yield tests for 25 location years during the period 1987-1988.

Variety	Leaf Rust	Stem Rust	Leaf Blight+
XW371	R-MR	R	4.8
2369	MS	R	4.7
Marshall	MR-MS	R	4.2
Len	R-MR	R	4.2
Stoa	R-MR	R	6.2

* Number of days from planting to 50% heading and physiologic maturity.

+ Scale of 1-9; 1 = poor, 9 = excellent.

Table 3. Results of quality testing of XW371 by Pioneer Quality Laboratory 1987-1988.

Variety	TKW (grams)	Grain Protein (%)	Flour Protein (%)	Flour Yield (%)	Water Abs. (%)	Loaf Volume (cc)	Mix* Time	Mixing * Tolerance
XW371	36.7	16.4	15.9	70.0	65.0	84.0	3.7	4.9
2369	32.9	16.0	15.4	68.6	63.4	74.0	5.2	8.4
Marshall	31.0	15.4	15.2	70.2	62.7	75.0	3.0	2.1
Len	35.0	16.4	16.0	69.3	64.5	80.1	4.3	6.5
Stoa	30.4	15.9	15.6	69.2	64.6	80.4	4.0	5.0
Reps	28	28	7	7	4	4	7	7

Data are averages of 1987 and 1988.

* Mix time and mixing tolerance were determined with a mixograph. Time = minutes; tolerance = scale of 1-9 where 3-7 is satisfactory.

8900036

Table 4. Photoperiod response of XW371 and standard hard red spring wheat varieties based on the effects of a five-hour night interruption by a field lighting system at Yuma, Arizona, 1986-1988.

Variety	Delay (Days) Due To Absence Of Lights*		Classification
	50% Heading	Phys. Maturity	
~~XW371~~ 2371	3.7	3.7	moderately insensitive
2369	5.0	4.0	moderately insensitive
Marshall	21.3	11.3	sensitive
Len	19.7	11.7	sensitive
Stoa	21.0	14.3	sensitive

* night interruption commenced eight weeks after seeding

- simulated "long day" = 5 hours of illumination 9:30 PM-2:30 AM

- short day = no lights, about a 12 hour normal day length

RAA 29 Mar 1993

EXHIBIT E. STATEMENT OF THE BASIS OF APPLICANTS OWNERSHIP 8900036

Pioneer Hi-Bred International, Inc., Plant Breeding Division, believes it is the sole, original and first breeder of the XW371 variety of hard red spring wheat for which it solicits a certificate of protection.

89000036

WHEAT DONATION AGREEMENT

Agreement made this 17th day of July, 1990 between Pioneer Hi-Bred International, Inc., an Iowa Corporation, with offices at 700 Capital Square, 400 Locust Street, Des Moines, Iowa 50309, (Pioneer) and the NDSU Research Foundation, a North Dakota non-profit corporation, whose address is P. O. Box 5051, State University Station, Fargo, North Dakota 58105-5165 (the Foundation).

RECITALS

Whereas, Pioneer has decided to discontinue its research and development of hard red spring wheat varieties and the marketing and sale of such varieties in North America; and

Whereas, Pioneer desires to ensure the continued availability of said hard red spring wheat varieties and germplasm to the public; and

Whereas, the Foundation has the ability to maintain and develop said varieties and germplasm and to make them available to the public;

Now therefore the parties agree as follows:

I. GERMPLASM

A. Pioneer agrees to donate and assign to the Foundation, all of its right, title and interest including assignment of PVP certificates to the hard red spring wheat varieties listed below:

2369, 2375, 2370 and XW371

B. The donation shall include:

2369	Foundation:	478
	Registered:	14
2370	Breeder Seed:	12
	Foundation:	607
	Registered:	4362
	Head Row Pkts:	3300
	Plot Pkts	201
2375	Breeder Seed:	15
	Foundation:	1189
	Registered:	8170
	Head Row Pkts:	3000
	Plot Pkts:	209

XC371	Breeder Seed:	12
	Foundation:	400
	Head Row Pkts:	5000
	Plot Pkts:	206

C. The Foundation understands and agrees that Pioneer® brand hard red spring wheat varieties will be made available for sale by Pioneer sales representatives through the 1990 sales season.

D. Pioneer agrees to donate to the Foundation all of its right, title, and interest except as restricted in Section II.A. below, to the following hard red spring germplasm lines:

Approximately 2300 F2 and F3 bulk populations;

Approximately 6500 F4, F5, and F6 selected lines;

Approximately 2700 lines of F7 and above generation with seed quantities adequate for yield testing.

including but not limited to seed stock, pedigree information, field books, quality and testing data,

II. RESTRICTIONS

A. The Foundation understands and agrees that the donation of the varieties and germplasm is restricted to development of varieties and sale of seed in North America only. The Foundation agrees to use its best efforts to prevent the distribution of the varieties and germplasm outside of North America.

B. The Foundation will not be permitted to use the name Pioneer® or any other registered trademark or service mark of Pioneer Hi-Bred International, Inc. in any manner whatsoever without the express written permission of Pioneer. The Foundation may use the variety numbers listed on the Plant Variety Protection certificates.

C. It is the hope and desire of Pioneer that the Foundation share the donated varieties and germplasm with other land grant institutions, specifically the University of Minnesota and South Dakota State University.

III. ANNOUNCEMENT AND EFFECTIVE DATE

A. The effective date of this Agreement shall be March 14, 1990. 14

IV. LIMITATION OF LIABILITY

A. Pioneer makes no warranty express or implied as to the yield, quality or tolerance to diseases, insects, or growing conditions of the varieties or the germplasm.

V. REPRESENTATIVES

A. All notices and correspondence shall be directed to the following representatives:

Pioneer: C. Sue Crum
Manager, Business Development
Pioneer Hi-Bred International, Inc.
317 6th Avenue, Suite 720
Des Moines, Iowa 50309

Foundation: Earl Foster, Chairperson
Crop and Weed Sciences Department
North Dakota State University
Box 5051 State University Station
Fargo, North Dakota 58105-5051

This Agreement constitutes the entire agreement and understanding between the parties and all previous discussions, representations, understandings or agreements are hereby merged in this Agreement.

This Agreement shall be binding upon the legal representatives, successors and assigns of the Parties.

PIONEER HI-BRED INTERNATIONAL, INC.

By _____
Thomas N. Urban, President

By _____
Vice-President Research

NDSU RESEARCH FOUNDATION

By _____
O.L. Ozbun, President

By _____
H. R. Lund, Secretary

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